NOTE XVIII.

THE SPONGES OF THE LEYDEN MUSEUM.

I. THE FAMILY OF THE DESMACIDINAE.

BY

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The Leyden Museum of Natural History possesses a collection of Sponges, which have never as yet been thoroughly examined nor classified in accordance with the progress, which has lately been made in this branch of science.

And so it was with much pleasure that I accepted the honourable task of determining and arranging this collection, being at the same time convinced of the necessity of treating the different groups separately.

In the following paper I propose to treat of the family of the *Desmacidinae*, siliceous Sponges which by their anchors, bows and bihamate (S- shaped) spicules form a very distinct group.

Generally speaking the determination of Sponges affords peculiar difficulties. Almost every species varies considerably: it is very rare that a Sponge forms a so called „good species." Even with the aid of Haeckels' splendid monograph one very often remains in doubt about the name of certain species of calcareous Sponges. This is still more the case with siliceous Sponges, the literature of which is so widely spread in different periodicals.

Unluckily the confusion has been increased by the fact that two great monographs were in preparation at about the same time, one in England and one in Germany. Bowerbank, who had long since published studies on Sponges in the Annals and Magazine of Natural History, and in the Transactions of the Royal Society, qualified by himself, as „desultory observations on their structure", completed these studies by the publication of the first volume of the „Monograph of the British Spongiadae" in 1864.

Meanwhile „Die Spongien des Adriatischen Meeres" by Oscar Schmidt had appeared in 1862. Bowerbank however entirely ignores this paper, even in the second volume of his monograph (published 1866.) Only in the preface of the third volume (1874!) Schmidt's work is mentioned. And in what manner?! Oscar Schmidt is indeed justified in complaining of this negligence. Schmidt [1]) seems to be right in presuming that Bowerbank did not sufficiently understand the German language. The introduction to the third volume of Bowerbank's Monograph, compared with the introduction to Schmidt's latest work will soon convince one of the truth of this statement.

The value of Bowerbank's book consists in the great number of facts, although separate and inconsistently arranged. Bowerbank divides the siliceous Sponges into seven groups, according to the arrangement and direction of the spicula, Schmidt considers them more in general, with regard to their mutual relation, their genealogy. And thus Schmidt's system is based upon better, at least upon more natural principles. Bowerbank simply gives a description of species, not to say of individuals, and arranges the species in genera, families etc.; Schmidt on the contrary strives towards a classification which shall show their derivation and relation. On account of these and other considerations I propose to follow the system of

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1) Die Spongien des Meerbusen von Mexico. 1879.

Schmidt, which is nowadays generally adopted. The foundations of the building which Schmidt is in the course of erecting are much more firm and strong than those of Bowerbank. If we go on building upon the foundations which Schmidt has laid, certain changes and alterations will always have to be made;.... did not the builder himself often give the example?... but these will not endanger the solidity of the whole structure. And so the system of Oscar Schmidt is the trunk on which that of Bowerbank, and likewise that of Carter and others ought to be grafted, and not inversely.

The system of Schmidt, however, is not followed in England; and has even been rejected and replaced by other arrangements. Thus Gray made another, which certainly was not very satisfactory, but still he always stuck to it.

Carter too, of whom it might be supposed that he would follow the principles of Schmidt, made still another classification, and is now, I believe, occupied in arranging and describing the Sponges of the British Museum, in accordance with his own system. Only one man in England, Sir C. Wyville Thomson, has declared himself in favour of Schmidt's views! In his paper on the Vitreous Sponges [1]) he says: „I think that certainly the most satisfactory arrangement of sponges is that proposed by Dr. Oscar Schmidt", and further on: „The only classification which has any material advantage over the older classifications of Nardo, de Blainville, Johnston and Lieberkühn, seems to be that of Dr. Oscar Schmidt. Duchassaing and Michelotti, Bowerbank and Gray have each made valuable individual suggestions; but Dr. Schmidt's grouping, taken as a whole, appears to be the most in accordance with our knowledge of the anatomy and physiology of the class."

On the continent, however, the opinions expressed by Prof. Wyville Thomson are more generally accepted. Most

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1) Ann. a Mag. 1868. I. p. 114 cet.

Spongiologists follow the system of Schmidt. *As a principle* at least, for Schmidt himself has made several changes, Wyville Thomson has made „slight modifications" 1), and Zittel proposed many very practical ameliorations.

In the following pages I propose to describe and enumerate the species of *Desmacidinae;* this family is taken in the sense proposed by Schmidt in 1870 2). Nevertheless I have added the genus *Clathria* for reasons to be explained in due time.

One word to explain the abreviations, which are made use of in the descriptions of the species. In order to facilitate the comparison of different species, I have long since tried to indicate the spicules of the siliceous Sponges by means of formulas or signs, which were based upon the fundamental forms of the spicula, proposed by Schmidt 3) viz. monaxial, tri-axial, tetraxial and polyaxial.

The *Desmacidinae* only possess monaxial spicules: different kinds of smooth and spined rods 4) and bows, and bihamate spicules. These few forms are indicated by the following signs: tr. (*tr*uncatus) = blunt, ac (*ac*utus) = sharp, pointed. Thus tr. ac. means: blunt at one end, pointed at the other. If the former is distinctly swollen, an ° is put on the tr., for instance tr°. ac. If both ends are blunt it must be tr. tr, or when at the same time they are equal tr^2.; f(*f*usiformis) added to a sign means: swollen in the middle; sp(*sp*inosus) added to a sign means: spined, thorny. Anc(*anc*hora) = anchor. When the number of the teeth can be distinguished the number of these can be added.

And so we have:

tr. ac. = acuate (= „Stifte" = „Stumpf-spitz.")

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1) Ann. and. Mag. 1868 I p. 110.

2) Grundzüge einer Spongien Fauna des Atlantischen Gebietes; pag. 52.

3) Ibid. p. 2.

4) It is perhaps practical to designate by this word those spicules of which the type is a simple rod (Stabnadel of the Germans, linear skeleton-spicula Crtr.).

ac^2 (ac. ac.) = acerate (= „spitz-spitz" = „umspitz.")
ac^{2}f = fusiformi-acerate (= „Spindel.")
tr$^\circ$. ac. = spinulated = pin-shaped (= Stecknadel.")
tr$^{\circ 2}$. = biclavated cylindrical.
tr. ac. sp. = spined spiculum (= „Knotennadel.")
∧ = tricurvate acerate = bow (= „Bogen.")
∽ = simple, reversed or contort bihamate, exter-and interumbonate, abbreviated bihamate S-shaped etc. It seems to me more practical to unite all these, as they are only modifications of one type (= „Spangen" = sigmoid spicula").
∽̶ = trenchant bihamate.
anc^2. 2 (anc^2. 3) = bidentate (tridentate) equianchorate (= „zwei, dreizähnige Doppelanker.")
rut^2. = dentato-palmate equianchorate, palmated equianchorate etc. (= „Doppelschaufel")[1].
rut. rut. = id. inequianchorate etc. (= „Pantoffel.")

It is not here the place further to insist upon the practical advantages of this system of formulas; but I intend to do so soon, and to work it out more completety.

We can now pass to the enumeration and description of the species, which have at present been introduced into literature, as far as I have been able to find. The species, of which there are specimens in the Leyden Museum will be marked with *. The following list is but a *provisional* one; as soon as possible I hope to publish a more extensive memoir on this subject, with the indispensable illustrations of the new species. I must also refer to this paper, which is yet in preparation, for further explanation of the reasons which have led me to identify several species.

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1) *Rutrum* = trowel.

ORDO MONACTINELLIDAE Zitt.

Monaxial siliceous spicules.

FAMILIA DESMACIDINAE O. S.

Char. emend. Vosm.

Bianchorate spicules, either accompanied or replaced by bow sor (and) bihamate (S-shaped) spicules. Smooth and spined rods, considerably varying in shape, are always present.

Genus I. Desmacodes O. S. 1870.

In addition to the rods there are only bows or bihamate spicules, no anchors.

1. **Desmacodes subereus** O. S. 1870.
Litt. Schmidt, Spong. Atl. G. pag. 54. without illustr.
Spic. tr. ac.
tr°. ac.
ac^2.
∽
Loc. Portugal.

2. **Desmacodes Peachi** (Bwk.) Vosm.
Synon. Desmacidon Peachii Bwk. '74
Litt. Bowerbank. M. Br. Sp. II p. 349, III p. 163.
Spic. tr°. ac.
ac^2.
ac^2. f. ?
∽
Loc. Shetland.

3. ***Desmacodes corrugatus*** (Bwk.) Vosm.
Synon. Halichondria corrugata Bwk. '66.
? Halichondria inornatus Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 242, III pag. 105.
Bowerbank. M. Br. Sp. II pag. 271, III p. 119.
Spic. tr°. ac.
tr°. ac. f.
∽
Loc. Hastings, Isle of Man, Isle of Herm, Shetland.

4. ***Desmacodes candidus*** (Bwk.) Vosm.
Synon. Halichondria candida Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 251, III p. 109.
Spic. tr. ac.
tr. ac. sp.
∽
Loc. Guernsey.

5. ***Desmacodes varians*** (Bwk.) Vosm.
Synon. Hymeniaciden variantia Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 174, III p. 113.
Spic. tr. ac. (often; flexuous.)
∽ (large and small ones).
Loc. Tenby.

6. ***Desmacodes pulchellus*** (Bwk.) Vosm.
Synon. Halichondria pulchella Bwk.
Litt. Bowerbank. M. Br. Sp. II p. 256, III p. 116.
Spic. tr. ac. sp.
tr^{3}. sp.
∽
Loc. Guernsey.

7. ***Desmacodes fibulatus*** (O. S.) Vosm.
Synon. Reniera fibulata O. S. '62.
? Halichondria Couchii Bwk. '74
? Halichondria elegantia Bwk. '75.
? Halichondria varia Bwk. '75.
? Isodictya virgata Bwk. '75.
Litt. Schmidt. Sp. A. M. p. 73.
Schmidt. Sp. A. G. p. 40.—

Bowerb. M. Br. Sp. III p. 198 and 203.—
Bowerb. Proc. Z. Soc. p. 286 (without illustr.)
Bowerb. Ibid. pag. 292.—
Bowerb. Ibid. pag. 294. (without illustr.)
Spic. ac^2.
∽
Loc. Triest. Coast of Portugal.
Cornwall. — Straits of Malacca.

In the „Grundzüge einer Spongien Fauna des Atlantischen Gebietes," it seems that Schmidt also wishes to bring his *Reniera fibulata* under the *Desmacidinae.* In such case it is evident that the Sponge must be a *Desmacodes.* Probably Bowerbank's *Hal. Couchii* is identical with it. Bowerbank says in the description of his *Hal. elegantia* that »the nearest allied species is *Hal. Couchii.* ...... Fortunately the abundance of bihamate retentive spicula in *Hal. elegantia* and their complete absence in *Hal. Couchii* renders the discrimination of the two species easy and certain." But in his description of *Hal. Couchii*, he says that is has: „retentive spicula simple and contort, bihamate, minute and slender;" he adds however „not very numerous." And so the difference between the two species seems to be a quantitative, not a qualitative one. As Bowerbank gives no illustration of his *Hal. elegantia* it must however remain doubtful for the moment.

8. **Desmacodes cavernulus** (Bwk.) Vosm.
Synon. Desmacidon cavernula Bwk. '74.
Litt. Bowerb. M. Br. Sp. III p. 268.
Spic. tr. ac.
tr. ac. f.
∽
Loc. Shetland.

9. **Desmacodes intextus** (Crtr.) Vosm.
Synon. Microciona intexta Crtr. '76.
Litt. Carter. Ann. a Mag. 1876. XVIII p. 218.
Spic. tr. ac. sp.
∽

Loc. Near Cape St. Vincent in 374 fathoms.

10. ? **Desmacodes pusillus** (Crtr.) Vosm.
Synon. Microciona pusilla Crtr. '76.
Litt. Carter. Ann. a. Mag. 1876. XVIII p. 239.
Spic. tr. ac. („bent portion has a tendency to a spiral twist.")
∽ (?)
Loc. „Probably from the Tropics."

In describing this species, Carter places a note of interrogation after „bihamate spicules." And therefore, it being as yet uncertain if bihamates really do occur, I am not sure that the Sponge is a Desmacidine. In the explanation of the plates there is a mistake. Instead of *Micr. pusilla* we find *Microciona minutula.*

11. **Desmacodes angulatus** (Bwk.) Vosm.
Synon. Halichondria angulata Bwk. '66.
Isodictya fallax Bwk. '66.
Litt. Bowerb. M. Br. Sp. II p. 233, III p. 101.—
Bowerb. M. Br. Sp. II 302, III p. 132.
Spic. ac^2. (two kinds.)
Λ
Loc. Guernsey.

12. **Desmacodes seriatus** (Grant) Vosm.
Synon. Ophlitaspongia seriata Bwk. '74.
Chalina seriata Bwk. '66.
Halichondria seriata Johnst. '42. (acc. to Bwk.)
Spongia seriata Grant. '26. (acc. to Johnst.)
Litt. Bowerb. M. Br. Sp. III p. 167.
Norman. Ann. a. Mag. 1869. III p. 298.
Bowerb. M. Br. Sp. II p. 367.
Schmidt. II Suppl. p. 10.—
Johnston. Br. Sp. p. 125.—
Grant. Edinb. Phil. Journ. XIV p. 116.
Spic. tr. ac. f.
tr°. ac.
Λ

Loc. Frith of Forth, Tenby, Jersey.
Tobermory.

13. ***Desmacodes laevis*** (Bwk.) Vosm.
Synon. Microciona laevis Bwk. '66.
Litt. Bowerb. M. Br. Sp. II p. 127, III p. 59.
Schmidt. Sp. Atl. G. pag. 76.
Gray. Ann. and Mag. 1868. I p. 163.
Spic. tr. ac. (two kinds).
tr. ac. sp.
∧
Loc. Shetland.

According to Schmidt (l. c.) it is a *Desmacidine.* If this be true, and I think it is, it can be no other than a *Desmacodes.*

14. ***Desmacodes pumilio*** (O. S.) Vosm.
Synon. Desmacella pumilio O. S. '70.
Litt. Schmidt. Sp. A. G. pag. 53. (no illustr. of the spicules).
Carter. Ann. and Mag. 1874. XIV. p. 250.
Spic. tr°. ac.
∽ (according to Carter.)
∧ (acc. to Carter.)
Loc. Florida, 324 fathoms. Atl. Ocean.

15. ***Desmacodes vagabundus*** (O. S.) Vosm.
Synon. Desmacella vagabunda O. S. '70.
Litt. Schmidt. Sp. A. G. pag. 53. (without illustration).
Schmidt. Erg. N. F. pag. 117. (without illustr.).
Spic. tr°. ac.
ac^2 (var. annexa).
∽
Loc. Florida, 98—145 fathoms. S. W. from Bukenfjord; 106 fathoms.

The variety *annexa*, characterized by the presence of ac^2 is also found near Florida. Is it not better to regard this variety as a distinct species, as Schmidt did in 1870?

16. ***Desmacodes involvens*** (O. S.) Vosm.
Synon. Myxilla involvens O. S. '64.
Litt. Schmidt. I Suppl. pag. 37.

Spic. tr. ac. sp. (tr°. tr. sp.)
tr°. ac.
Λ
Loc. Lacroma.

Schmidt does not speak of anchors; nor could I find them, even in the original specimen. The bows are nemerous enough.

GENUS II. DESMACELLA O. S. '70. S. Str.

In addition to the rods, only bows and trenchant or strongly recurved bihamate spicules, no anchors.

1. ***Desmacella Johnsoni*** O. S. '70.
Synon. Hymedesmia Johnsoni Bwk. '64. (acc. to Schmidt).
Litt. Schmidt. Sp. Atl. Geb. pag. 53.
Schmidt. Erg. N. F. pag. 117.
Bowerbank. M. Br. Sp. I. p. 247.
Carter. Ann. a. Mag. 1874. XIV. p. 246.
Spic. ac^2.
∞ (trenchant bih. and strongly bent bih.).
Λ (accord. to Carter, not in the specimen given by Bowerbank, but frequently in another specimen from Madeira).
Loc. Florida. N.W. from Hougesund, (106 fathoms). Madeira.

2. ***Desmacella falcula*** (Bwk.) Vosm.
Syn. Halichondria falcula Bwk. '74.
Litt. Bowerb. M. Br. Sp. III p. 207 and 208.
Spic. tr. ac.
∞ (trenchant bihamate).
Loc. Shetland.

GENUS III. AMPHILECTUS. NOV. GEN.

Rods smooth or spined. Anchors bi-or tri-dentate, or palmato-dentate, equi-or inequiended. Neither true »keratode-fibre" as in Desmacidon, nor total absence of it as in the slimy Myxilla.

The numerous points of conformity between the genera

Desmacidon and *Myxilla* on one side, and between the genera *Esperia* and *Desmacidon* on the other side, are the cause that the systematic arrangement of these genera presents considerable difficulties. Between the two former, as well as between the two latter we observe gradual transitions. There are plenty of species that can be arranged under either of the two genera. So for instance it may be either *Esperia anceps* O. S. or *Desmacidon anceps* O. S. In the „Zweite Deutsche Nordpolarfahrt"[1] Schmidt says: „Ich habe in meinen letzten Arbeiten die proteusartige Gattung *Desmacidon* einigermaassen zu begrenzen versucht, jedoch mit dem Zugeständniss, dass sie nur ganz künstlich gegen die ältere Gattung *Esperia* abgespert werden kann." Even the characteristic Esperia-anchors are not always a good criterion for the difference between the two genera. *Desmacidon anceps* O. S. '74 is however not the only example. We have further *Esperia lanugo* O. S. '75, *Esperia titubans* O. S. '70. *Rhaphiodesma Parishii* Bwk. '75 and many others which show a considerable instability in the form of their anchors. Nor is the difference between *Desmacidon* and *Myxilla* a distinct one. Schmidt himself says of his *Desmacidon caducum* that it may either be placed under *Myxilla* or under *Desmacidon*.

Although, there are numerous transitions from *Esperia* to *Desmacidon*, and from this to *Myxilla*, nevertheless it is easy enough to distinguish the true *Desmacidon's* from the true *Esperia's* or *Myxilla's*. So, having the choice either of uniting all these forms in one very large genus showing gradual transitions between the extremes, or of retaining generic subdivisions, I think it to be advisable, from a simply practical point of view, to bring, the *indisputable* forms under one of these three genera, and the others to *Amphilectus*[2] nov. gen. I consider this genus *Amphilectus* as the yet living stock of *Esperia*, *Desmacidon* and *Myxilla*, in which the distinctive character of either of those, has not yet made its appearance. We have here, so to say, the materials, that may yet prove to be useful in the struggle for life. So for instance: the skeleton can be strengthened by keratode-fibre, and in this way a *Desmacidon* would appear; the varying achors of *Amphilectus* become equiended in *Desmacidon* and *Myxilla*, inequiended in *Esperia*. Even though we cannot at first understand, why it should be more useful for a Sponge to have inequiended anchors than equiended ones, or the contrary, still we may suppose that in some way or other there is a certain benefit attached to it.

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[1] Pag. 430.

[2] ἀμφίλεκτος, dubious.

And so I have united in this new genus those species which stand between *Esperia* and *Desmacidon* by the simultaneous or varying appearance of symmetric or asymmetric anchors. Further those species, which do not distinctly show the characteristics of *Desmacidon* and *Myxilla*; finally — although as yet only provisionally — all those species which are so imperfectly described, that the question cannot be decided. In this case it may be supposed that certain characteristics of the above mentioned genera did not very distinctly show themselves.

Speaking in a Haeckelian sense, one may regard *Amphilectus* as the principal genus; *Esperia*, *Desmacidon* and *Myxilla* as generic varieties.

1. ***Amphilectus gracilis*** (Bwk.) Vosm.

Synon. Isodictya gracilis Bwk. '66.
Isodictya Edwardii Bwk. '66.
Isodictya paupera Bwk. '66.

Litt. Bowerb. M. Br. Sp. II p. 331, III p. 149.—
Bowerb. M. Br. Sp. II p. 325, III p. 148.—
Bowerb. M. Br. Sp. II p. 328, III p. 139.

Spic. tr. ac. (two kinds.)
anc^2.2 („minute, few in number.")

Loc. Lough Larne (Ireland). — Banff. (Scotland). — Torquay.

2. ***Amphilectus compressus*** (Bwk.) Vosm.
Synon. Halichondria compressa Bwk. '75.
Litt. Bowerb. Proc. Z. Soc. pag. 291 (without illustr).
Spic. tr. ac.
tr°. ac.
anc^2.2 („large and stout, few in number; minute and slender, numerous").
anc^2.3 („rarely").
Loc. Straits of Malacca.

3. ***Amphilectus dubius*** (Bwk.) Vosm.
Synon. Isodictya dubia Bwk. '74.
Litt. Bowerb. M. Br. Sp. III p. 323 and 325.
Spic. tr. ac.
ac^2. („rarely.")
anc^2.2 („minute, very few in number").
Loc. Clew Bay.

4. ***Amphilectus Neptuni*** (O. S.) Vosm.
Synon. Desmacidon Neptuni O. S. '75.
Litt. Schmidt. Erg. N. F. pag. 117.
Spic. ac^2.
anc^2.2.
Loc. N. W. of Bukenfjord; 106 fathoms.

5. ***Amphilectus physa*** (O. S.) Vosm.
Synon. Desmacidon physa. O. S. '75.
Litt. Schmidt. Erg. N. F. pag. 118. without illustr. of the spicules.
Spic. tr$^{\circ 2}$. (never tr$^{\circ 2}$f.)
tr. ac.
ac^2.
anc^2.
Loc. S. W. of Bukenfjord. 106 fathoms.

6. ***Amphilectus Korenii*** (O. S.) Vosm.
Synon. Desmacidon Korenii. O. S. '75.
Litt. Schmidt. Erg. N. F. pag. 117 (without illustr.)
Spic. tr°. ac.
tr. ac.
(anc^2) NB.

Loc. S. W. of Bukenfjord in 106 fathoms.

Although Schmidt does not speak of anchors, it is evident that he has seen them, else he could not arrange the Sponge under *Desmacidon*. The same observation applies to number seven.

7. ***Amphilectus emphysema*** (O. S.) Vosm.
Synon. Desmacidon emphysema O. S. '75.
Litt. Schmidt. Erg. N. F. pag. 118 (without illustr.)
Spic. tr$^{\circ 2}$.
tr^{2}f.
tr$^{\circ 2}$f.
(anc^{2}) NB.
Loc. W. N. W. of Hougesund; S. W. of Bukenfjord in 106 fathoms.

8. ***Amphilectus asper*** (Bwk.) Vosm.
Synon. Halichondria aspera Bwk. '75
Litt. Bowerbank. Proc. Z. Soc. p. 287. (without illustr.)
Spic. tr$^{\circ 2}$.
ac^{2}. (long and slender.)
∽
anc^{2}.2 (stout, large, few in number; minute numerous.
Loc. Straits of Malacca.

9. ***Amphilectus appendiculatus*** (Crtr.) Vosm.
Synon. Histoderma appendiculatum Crtr. '74.
Litt. Carter. Ann. a. Mag. XIV. pag. 220.
Spic. tr. ac. („abruptly pointed")
tr$^{\circ 2}$.
∽ (stout, large.)
anc^{2}. 3.
Loc. W. Coast of Ireland, 109—808 fathoms.

10. ***Amphilectus rigidus*** (Bwk.) Vosm.
Synon. Halichondria rigida Bwk. '75.
Halichondria crassa. Bwk. '75.
Litt. Bowerb. Proc. Z. Soc. pag. 289.
Bowerb. Proc. Z. Soc. pag. 290.
Spic. tr. ac.

∽
anc^2.2 (small, rather stout, not numerous").
Loc. Straits of Malacca.

11. ***Amphilectus filifer*** (O. S.) Vosm.
Synon. Desmacidon filiferum O. S. '75.
Litt. Schmidt. Erg. N. F. pag. 117. (without illustr. of the spicules).
Spic. tr^2.f.
∽
anc^2.
Loc. S. W. of Bukenfjord, in 106 fathoms.

12. ***Amphilectus caducus*** (O. S.) Vosm.
Synon. Desmacidon caducum O. S. '68.
Litt. Schmidt. Sp. K. A. pag. 11.
Spic. tr. ac. sp.
(tr$^{\circ}$. ac. sp.)
tr^2.f.
∽
anc^2.
Loc. Algiers.

13. ***Amphilectus rugosus*** (Bwk.) Vosm.
Synon. Isodictya rugosa. Bwk. '74.
Isodyctya tumulosa Bwk. '74.
Litt. Bowerb. M. Br. Sp. III p. 331 and 332.—
Bowerbank. Ibid. pag. 343 and 344.
Spic. tr. ac. sp.
ac^2.
∽
anc^2.2.
Loc. Hastings. Torquay.

14. ***Amphilectus gigas*** (Merejk.) Vosm.
Synon. Myxilla gigas. Merejk. '78.
Litt. Merejkowsky. Ep. M. Bl. p. 44. (without illustr.)
Spic. tr. ac. sp.
tr^{o2}.
∽
anc^2.

Loc. White Sea.

15. ***Amphilectus Beanii*** (Bwk.) Vosm.
Synon. Isodyctya Beanii Bwk. '66.
Litt. Bowerb. M. Br. Sp. II p. 334, III p. 147.
Spic. tr. ac.
tr. ac. sp. („short and stout").
Λ
anc^2. 2. (minute, very rare").

16. ***Amphilectus atrasanguineus*** (Bwk.) Vosm.
Synon. Microciona atrasanguinea Bwk. '66.
Litt. Bowerb. M. Br. Sp. II. p. 138, III p. 63.
Spic. tr. ac.
(tr$^\circ$. ac.)
tr. ac. sp. (f.)
Λ
anc^2. 2.

17. ***Amphilectus coriaceus*** Bwk. Vosm.
Synon. Isodictya coriacea Bwk. '74.
Litt. Bowerbank. M. Br. Sp. III pp. 223 and 228.
Spic. tr. ac.
t$^{\circ 2}$. sp.
Λ
anc^2. 2. („minute, few in number").

18. ***Amphilectus frondifer*** (Bwk.) Vosm.
Synon. Halichondria frondifera Bwk. '75.
Litt. Bowerb. Proc. Z. Soc. p. 288.
(without illustration).
Spic. tr. ac. (two kinds).
tr. ac. sp.
anc^2. 2.
Loc. Straits of Malacca, Gaspar Straits.

19. ? ***Amphilectus expansus*** (Bwk.) Vosm.
Synon. Halichondria expansa Bwk. '69.
Litt. Bowerb. Ann. a. Mag. III p. 298.
Spic. tr^2.f.sp. („fusiformi-cylindrical, terminations incipiently spinous, spines very minute").

ac^2. sp.?
anc. anc. („bidentate inequianchorate").
Loc. Sound of Skye.

20. ***Amphilectus fimbriatus*** (Bwk.) Vosm.
Synon. Isodictya fimbriata Bwk. '66.
Litt. Bowerb. M. Br. Sp. II p. 337, III p. 147.
Schmidt, II Suppl. p. 17.
Schmidt, Sp. Atl. Geb. p. 56.
Spic. tr. ac.
tr. ac. sp.
anc^2.3.
rut^2. („bifimbriate equianchorate").
Loc. Shetland.

21. ***Amphilectus laciniosus*** (Bwk.) Vosm.
Synon. Isodictya laciniosa Bwk. '74.
Litt. Bowerb. M. Br. Sp. III p. 219.
Norman. Ann. a. Mag. 1869. III p. 298.
Norman. Report Brit. Association.
Spic. tr. ac.
tr^o. ac.
tr. ac. sp.
anc^2.
? rut^2. („bicalcarate bihamate").
Loc. Shetland.

I am not quite sure that the „bicalcarate bihamate" is a modification of the rut^2. in general. Bowerbank gives only one illustration of this kind of spiculum (Mon. Br. Sp. Vol. I. Pl. V. fig. 121), which is taken in profile.

22. ***Amphilectus imitatus*** (Bwk.) Vosm.
Synon. Isodictya imitata Bwk. '74.
Litt. Bowerb. M. Br. Sp. III p. 223 and 226.
Spic. tr. ac.
anc^2.2.
rut^2.
Loc. Belfast.

23. ***Amphilectus ambiguus*** (Bwk.) Vosm.
Synon. Microciona ambigua Bwk. '66.

Litt. Bowerb. M. Br. Sp. II p. 136, III p. 65.
Marenzeller. Coelenterata etc. O. N. E. p. 14.
Spic. ac^3.
tr. ac. sp.
tr. ac.
rut^3. (anc^2. ?)
Loc. Shetland. Between Franz-Joseph Land and Nova-Zembla, 142 fathoms.

24. ***Amphilectus fucorum*** (Johnst.) Vosm.
Synon. Isodictya fucorum Bwk. '66.
Halichondria fucorum Johnst. 1842. (accord. to Bowerbank).
Spongia fucorum Esper. 1830? (acc. to Johnst.)
Halispongia parasitica Blainv. 1837? (acc. to Johnston).
Halichondria parisitica Flem. 1828. (acc. to Johnston).
Spongia parasitica Mont. 1818. (acc. to Johnst.).
Litt. Bowerbank. M. Br. Sp. II p. 322, III p. 142. —
Johnston Br. Sp. p. 112. —
Esper. Pflanzenth. Sp. Tab. XLIX fig. 1, 2. —
Blainville, Actinol. pag. 532. —
Fleming. Brit. Anim. pag. 521.
Thomson. Ann. a. Mag. V. p. 254.
Bellamy. South Devon. p. 268. —
Montagu. Br. Sp. pag. 114.
Grant. New. Phil. Journ. 1826. I pag. 348.
Spic. tr. ac. (two kinds).
∽
rut^2.
Loc. Brighton, Shetland, Scarborough, Hastings.

25. ***Amphilectus Normani*** (Bwk.) Vosm.
Synon. Isodyctya Normani Bwk. '66.
Isodictya Alderi Bwk. '66.
Litt. Bowerb. M. Br. Sp. II p. 320, III p. 141.
Bowerb. M. Br. Sp. II p. 323, III p. 143.
Spic. tr. ac. (two kinds).

ac^2. (rarely.)
rut^2.
Loc. Guernsey. — Bambough, Northumberland.

26. ***Amphilectus foliatus*** (Bwk.) Vosm.
Synon. Halichondria foliata. Bwk. '74.
Litt. Bowerb. M. Br. Sp. III pp. 197 and 198.
Carter. Ann. a. Mag. 1876 XVIII p. 310.
Spic. tr. ac. (slender, straight).
tr. ac. (stout, „flecto-acuate").
Λ
anc^2. 2.
rut^2.
Loc. Shetland; 17 fathoms.

27. ***Amphilectus mutulus*** (Bwk.) Vosm.
Synon. Halichondria mutula Bwk. '74.
Litt. Bowerb. M. Br. Sp. III pp. 207 and 209
Spic. tr. ac. (two kinds.)
Λ
rut^2.
Loc. Shetland, 96 fathoms.

It is not impossible that this Sponge is only a variety of the preceding.

28. * ***Amphilectus armatus*** (O. S.) Vosm.
Synon. Microciona armata. Bwk. '66.
Scopalina toxotes O. S. '68.
Litt. Bowerb. M. Br. Sp. II p. 129, III p. 60.
Schmidt. Sp. K. A. pp. 26 and 39.
Spic. tr. ac.
tr$^{\circ}$. ac.
tr. ac. (f.)
tr. ac. sp.
Λ
anc^2. 2.
rut^2.
Loc. Belfast Lough, Jersey. Triëst, Zara.

Studying at the zoological Station at Triëst, where I was admitted to the laboratory thanks to the great kindness of Prof. F. E. Schulze, I often had opportunity to examine *Scopalina toxotes* O. S. I was able to convince myself that both, anc^2. 2 and rut^2. occur. In the original Sponge of Schmidt, in the Joanneum-Collection in Graz, the anchors are *very* rare, and so I could not find anc^2. 2. Having convinced myself of the identity of the original *Scopalina* O. S. and the Sponges I had examined in Triëst, I concluded; 1°. that *Scopalina toxotes* O. S. = *Microciona armata* Bwk. 2°. that all the above mentioned kinds of spicules can occur.

29. ***Amphilectus phlyctenodes*** (Crtr.) Vosm.
Synon. Halichondria phlyctenodes Crtr. '76.
Litt. Carter. Ann. a. Mag. XVIII pag. 314.
Spic. ac^{2}f.
∽
rut^2.
Loc. A few miles N. of Cape St. Vincent; 374 fathoms.

30. ***Amphilectus Clarkei*** (Bwk.) Vosm.
Synon. Isodictya Clarkei Bwk. '66.
Litt. Bowerb. M. Br. Sp. II p. 330, III p. 142.
Spic. tr. ac.
rut^2. [rut. rut.]
Loc. North Shields, Dundee.

31. ***Amphilectus Parishii*** (Bwk.) Vosm.
Synon. Rhaphiodesma Parishii. Bwk. '75.
Litl. Bowerb. Proc. Z. Soc. p. 283. (without illustr.)
Spic. tr. ac.
tr$^{\circ 2}$.
Λ
∽ (large ones and minute ones).
rut. rut. („congregated in groups," large and strong).
rut. rut. („minute").
anc. anc. („minute").
anc^2 2. („large and stout").
Loc. Straits of Malacca.

32. ***Amphilectus anceps*** (O. S.) Vosm.
Synon. Desmacidon. anceps. O. S. '74.

Esperia anceps. O. S. '74.
Litt. Schmidt, Zweite Nordp. F. II p. 430.
Schmidt, Erg. N. F. 1875. p. 117.
Spic. tr. ac.
tr. ac. sp.
tr°. ac.
(tr°^{2}. sp.)
(∧ sp.) [„Klammer"].
(anc^{2}.)
(rut^{2}.)
rut. rut.
Loc. Nordshannon, Arendal; S. W. of Bukenfjord in 106 fathoms; W. Greenland.

33. ***Amphilectus fabricans*** (O. S.) Vosm.
Synon. Esperia fabricans O. S. '74.
Litt. Schmidt. Zw. Nordp. F. II. p. 433.
Spic. »Spitz" = ?
anc^{2}.
rut. rut.
Loc. Unknown.

34. ***Amphilectus lanugo*** (O. S.) Vosm.
Synon. Esperia lanugo. O. S. '75.
Litt. Schmidt. Erg. N. F. p. 118. (without illustration).
Spic. tr. ac.
rut. rut.
rut^{3}.
Loc. Great Belt, in 24 fathoms.

35. ***Amphilectus titubans*** (O. S.) Vosm.
Synon. Desmacidon titubans O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. p. 55.
Spic. tr. ac. (two kinds).
∽
anc. anc.
anc.
Loc. Florida; 175—324 fathoms.

36. ***Amphilectus spinulentus*** (Bwk.) Vosm.
Synon. Microciona spinulenta. Bwk. '66.

Litt. Bowerb. M. Br. Sp. II. p. 132, III p. 61.
Spic. t^{c2}.
tr$^{\circ}$. ac. sp. (two kinds).
anc. anc. (nearly anc^{2}.)
„unipoculated" [= ∽ ?]
Loc. Weymouth-Bay.

37. ? ***Amphilectus expansus*** (Bwk.) Vosm.
Synon. Halichondria expansa. Bwk. '69.
Litt. Bowerbank. Ann. a. Mag. III p. 298. (without illustration).
Spic. tr^{2}f. sp. („fusifórmi-cylindrical, terminations incipiently spinous, spines very minute").
ac^{2}. sp. ?
anc. anc. 2.
Loc. Sound of Skye.

38. ***Amphilectus crux*** (O. S.) Vosm.
Synon. Desmacidon crux. O. S. '75.
Litt. Schmidt. Erg. N. F. pag. 118.
Spic. ac^{2}.
tr. ac. sp.
anc^{2}. sp.
Loc. S. W. of Bukenfjord; 106 fathoms.

39. ***Amphilectus microcionides*** (Crtr.) Vosm.
Synon. Hymeraphia microcionides Crtr. '76.
Litt. Carter. Ann. and Mag. XVIII p. 390. (without illustration).
Spic. tr. ac.
tr. ac. sp.
tr^{2}. sp. (bent).
anc^{2}. (or rut^{2} ?)
Loc. Near Cape St. Vincent, 374 fathoms.

40. ***Amphilectus planus*** (Crtr.) Vosm.
Synon. Microciona plana Crtr. '76.
Litt. Carter. Ann. and Mag. XVIII p. 238. (without illustration).
Spic. tr. ac.
tr$^{\circ}$. ac. sp.

rut^2. (shuttle-like.)
Loc. Cape St. Vincent, 374 fathoms.

41. * ***Amphilectus papillatus*** nov. spec.
Spic. ac^2 f. (two kinds.) [ac. ac. f.]
ac^2 (slender)
Λ (few.)
anc^2.3. (anc. anc.)
Loc. Cape of Good Hope. [Mus. L. B.]

The specimen in the Leyden Museum has a certain resemblance with the illustration, which Schmidt gives of his *Esperia renieroides* [1]; only the papillae are not so large in our Sponge.

42. ***Amphilectus caespes*** (Ehl.) Vosm.
Synon. Scopalina caespes Ehlers. '70.
Litt. Ehlers. Die Esp. Spong. p. 19. (without illustr.)
Esper. Pflanzenth. Sp. Tab. LIV.
Spic. tr. ac. sp.
anc^2.3.
Loc. Cape of Good Hope.

GENUS IV. SCLERILLA O. S. 1868.

Rods smooth or spined. Anchors bi-or tridentate, equiended. Irregular membranes of sarcode with stronger fibres.

I do not quite understand the meaning of Schmidt's diagnosis of this genus and will therefore give the original text. He says: »Ich fasse hiermit einige Spongien zusammen, welche in den meisten Charakteren mit *Myxilla* übereinstimmen, aber dadurch eine Mittelstellung zwischen ihnen und den Faserkieselschwämmen einnehmen, dass in ihren

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[1] Spongien Atl. Geb. Pl. V fig. 22 (see also Pl. V fig. 11, being an illustration of *Tedania suctoria*).

Parenchym stellenweise sich unregelmässige, festere Sarcode-Membranen und von diesen aus Verdickungen und unregelmässige, sich auch isolirende Fasern absondern."

1. ***Sclerilla filans*** O. S. '68.
   Litt. Schmidt. Sp. K. A. p. 13.
   Spic. tr°^{2}.
   tr. ac. sp.
   ∽
   »foliato-peltate spicules."
   anc^2.3.
   Loc. Algiers.
2. ? ***Sclerilla texturans*** O. S. '68.
   Litt. Schmidt. Sp. K. A. pag. 13.
   Spic. tr°. ac. sp.
   tr. ac. sp. (tr. ac.)
   tr°. ac.
   anc^2 ? (Schmidt).
   Loc. Algiers.

GENUS MYXILLA 1). O. S. 1862. s. str.

Rods smooth or spined; the spined rods prevailing, anchors bi- or tridentate, equiended. Soft, slimy Sponges when alive; brittle, easily reduced to powder, when dried, by the total absence of „keratode-fibre."

1. * ***Myxilla rosacea*** O. S. '62.
   Synon. Halichondria rosacea Lbkn. (acc. to Schmidt).
   Myxilla tridens O. S. '64.
   Myxilla fasiculata O. S. '62, [non Lbkn.]
   Myxilla Esperii O. S. in several collections.
   Litt. Schmidt. Sp. A. M. pag. 71. (without illustr.)
   Lieberkühn, Müll. Arch. 1859. p. 521.
   Schmidt. I, suppl. p. 36.

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1) μύξα, slime.

Schmidt, Sp. K. A. pp. 13 and 27.
Spic. tr. ac. sp.
tr. ac.
tr$^{\circ}$. 2. (the ends with three spines).
ac^2.
∽
anc^2.3.
Loc. Triëst, Zara, Venice, Algiers.

In Schmidt's original specimen of *M. fasciculata* (not = Hal. fasciculata Lbkn., as will be shown further on), desposited in the Joanneum-Collection in Graz, I have found exactly the same spicules as in *M. rosacea* and *M. tridens*. So I feel justified in concluding to the identity of those three species. Even in the original specimen of *M. tridens* I could *not* find the curious spicule, described by Schmidt 1) pag. 37; so I believe Schmidt is right in saying: „er könnte also ein Eindringling sein."

2. ***Myxilla thela*** 2) nov. spec.
Spic. tr. ac.
tr. ac. sp.
ac^2.
∽ (very numerous, stout; also little ones).
anc^2.3
Loc. Triëst.

This indubitable *Myxilla* occurs as a yellowish gray crust on stones. It is characterised by the acerate bars the ends of which are teat-shaped. The preceding sponge on the contrary has acerate rods of the usual form, and has besides these, the characteristic tridentate tr^{o2}.

3. ***Myxilla veneta*** O. S. '62.
Litt. Schmidt. Sp. Adr. M. p. 71.
Spic. ac^2.
tr. ac.

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1) I Supplement. 1864.
2) θηλή, teat.

tr. ac. sp.
anc^2.3.
Loc. Venice.

In Schmidt's original specimen (Joann. Graz) I could not find the slender tr. ac.

4. ***Myxilla pulvinar*** O. S. '68.
Litt. Schmidt. Sp. K. Alg. p. 14.
Spic. tr^2.
ac^2. sp.
∽
anc^2.
Loc. Algiers.

5. ***Myxilla proteidea*** O. S. '68.
Litt. Schmidt. Sp. K. Alg. p. 13.
Spic. tr°. ac. sp.
ac^2.
anc^2.
Loc. Algiers.

It is very probable that this species is but a variety of the following.

6. * ***Myxilla fasciculata*** (Pall.) Vosm. (non O. S.)
Synon. Halichondria fasciculata Lbkn. '59
Spongia fasciculata Pall. acc. to Lbkn.
Litt. Lieberkühn. Müll. Arch. p. 522.
Spic. ac^2.
tr. ac. sp. (tr^0. ac. sp.)
anc^2.
Loc. Triëst.

Prof. F. E. Schulze in Graz possesses an original specimen of Lieberkühn's *Halichondria fasciculata*, and kindly permitted me to study this type of the species; I found that only the three (four) above mentioned spicules occur. In Triëst I very often had opportunity to examine this Sponge and so I saw that these three (four) kinds of spicules are constant. The Sponge is as common as *M. rosacea* O. S. As for observations on histological structure, I must refer to my following paper, which I hope will be soon ready.

7. ***Myxilla fictitia*** (Bwk) Vosm.
Synon. Microciona fictitia Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 124, III p. 59.
Spic. ac^2. (slender.)
tr. ac. sp.
tr^0. ac.
anc^2.3.
Loc. Guernsey.

8. ***Myxilla plumosa*** (Bwk.) Vosm.
Synon. Microciona plumosa Bwk. '74.
Hymeniacidon plumosa Bwk. '66.
Microciona carnosa Bwk. '66.
Halichondria plumosa Johnst. '42 (accord. to Bowerbank).
? Spongia plumosa Mont. (acc. to Johnst.).
Litt. Bowerbank. M. Br. Sp. III. p. 61. —
Bowerbank. M. Br. Sp. II. p. 195. —
Bowerbank. M. Br. Sp. II. p. 133. —
Johnston. Br. Sponges. p. 103. —
Montagu. Ess. on Sp. p. 116.
Fleming. Br. Anim. p. 526.
Gray. Br. Fl. I. pag. 361.
Spic. ac^1.
tr. ac. sp.
anc^1.2.
Loc. Hastings, Ireland, Guernsey, Devon.

9. ***Myxilla zetlandica*** (Bwk.) Vosm.
Synon. Hymedesmia zetlandica Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 152, III p. 73.
Spic. tr. ac. sp. »strongly spined".
tr^1.
(tr^{01}.)
∽
anc^2.3.
Loc. Shetland, deep sea.

10. ? ***Myxilla perarmata.*** (Bwk.) Vosm.
Synon. Hymeniacidon perarmatus (Bwk.)

Litt. Bowerbank. M. Br. Sp. II p. 164, III p. 79.
Spic. ac^2.
tr^0. ac. sp.
anc^2.3.
Loc. Shetland.

11. ***Myxilla paupertas*** (Bwk.) Vosm.
Synon. Hymeniacidon paupertas Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 223, III p. 93.
Spic. tr^2. (tr^{02}.)
tr. ac. sp.
tr^0. ac. sp.
anc^2.3.
Loc. Shetland.

12. ***Myxilla forcipis*** (Bwk.) Vosm.
Synon. Halichondria forcipis Bwk. '66.
Litt. Bowerbank M. Br. Sp. II p. 244, III p. 105.
Carter. Ann. a. Mag. 1874. XIV. p. 246.
Carter. Ann. a. Mag. 1876. XVIII. p. 313.
Spic. tr. ac.
tr^{02}.
∽
»forcepiform, spined." (= Λ sp ?)
anc^2.3 (and anc^2.2).
Loc. Shetland; between the North of Scotland and the Färoër Islands, in 363 fathoms.

13. ***Myxilla bulbosa*** (Crtr.) Vosm.
Synon. Halichondria forcipis var. bulbosa Crtr. '76.
Litt. Carter. Ann. a. Mag. 1876. XVIII. p. 313.
Spic. tr. ac.
tro^2.
∽
Λ sp. (»bulbous at the extremities").
rut^2.
Loc. North side of Cape St. Vincent; 292—374 fathoms.

14. ***Myxilla Thompsoni*** (Bwk.) Vosm.
Synon. Halichondria Thompsoni Bwk. '66
Litt. Bowerbank. M. Br. Sp. II p. 243, III. p. 107.

Spic. tr. ac.
tr. ac. sp.
anc^2.2.
Loc. Belfast.

15. ***Myxilla irregularis*** (Bwk.) Vosm.
Synon. Halichondria irregularis Bwk. '66. —
Microciona Kentii Bwk. '74. —
Litt. Bowerbank. M. Br. Sp. II. p. 252, III p. 109. —
Bowerbank. M. Br. Sp. III. p. 311 and p. 317.
Spic. ac^2.
tr. ac. sp.
tr^0. ac. sp.
anc^2.2.
Loc. Hastings. — Jersey, Guernsey.

16. ***Myxilla granulata*** (Bwk.) Vosm.
Synon. Halichondria granulata Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II. p. 262, III. p. 111.
Spic. ac^2.
tr. ac. sp.
tr^0. ac. sp.
anc^2.3.
Loc. Oban.

17. ***Myxilla albula*** (Bwk.) Vosm.
Synon. Halichondria albula Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 268, III p. 112.
Spic. tr. ac.
tr. ac. sp.
anc^2.2.
Loc. Shetland.

18. ***Myxilla Batei*** (Bwk.) Vosm.
Synon. Halichondria Batei Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 261, III p. 117.
Spic. ac^2.
tr. ac. sp.
anc^2.2. (two kinds.?)
anc^2.3.
Loc. Shetland.

19. ***Myxilla jecusculum*** (Bwk.) Vosm.
Synon. Microciona jecusculum Bwk. '74.
Hymeniacidon jecusculum Bwk. '66.
Litt. Bowerbank. M. Br. Sp. III p. 273 and 274.
Bowerbank. M. Br. Sp. II p. 198.
Carter. Ann. a. Mag. 1876. XVIII p. 237.
Spic. tr. ac.
tr. ac. sp. (two kinds).
anc^2.2.
(anc^2.3.)
Loc. Harris-Island (Hebrides).

20. ***Myxilla fraudator*** (Bwk.) Vosm.
Synon. Microciona fraudator Bwk. '74.
Litt. Bowerbank. M. Br. Sp. III pp. 273 and 275.
Spic. ac^2.
tr. ac. sp.
anc^2.2.
Loc. Polperro, Forwey Harbour.

21. ***Myxilla indistincta*** (Bwk.) Vosm.
Synon. Hymedesmia indistincta Bwk. '74.
Litt. Bowerbank. M. Br. Sp. III pp. 303 and 304
Spic. tr. ac.
tr. ac. sp.
ac^2.
anc^2.2.
rut^2.
Loc. Shetland.

22. ***Myxilla occulta*** (Bwk.) Vosm.
Synon. Hymedesmia occulta Bwk. '74.
Litt. Bowerbank M. Br. Sp. III p. 245 and 250.
Spic. ac^2.
ac^{2}f.
tr. ac. sp.
anc^2.3. (rut^2.)
Loc. Shetland.

GENUS DESMACIDON (Bwk.) O. S. 1870. s. str.

Rods smooth or spined. Anchors bi- or tridentate, also palmato-dentate, equiended. „Keratode-fibre" very conspicuous.

1. ***Desmacidon grisea*** O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. p. 55.
Spic. tr^2. (slender).
∽
anc^2.3.
Loc. Florida in 9 fathoms.

2. ***Desmacidon armata*** O. S. '68.
Litt. Schmidt. Sp. K. A. p. 11.
Spic. ac^2. (stout).
tr. ac. (slender).
tr. ac. sp. (stout).
tr°. ac. sp. (slender).
anc^2.3.
Loc. Algiers.

3. ***Desmacidon arcifera*** O. S. '68.
Litt. Schmidt. Sp. K. Alg. p. 12.
Spic. ac.^{2}.
tr°. ac.
tr°. ac. f.
Λ
rut^2.
Loc. Algiers.

4. ***Desmacidon tunicata*** O. S. '70.
Synon. ? Desmacidon infestum O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. pag. 55.
Spic. tr^2.
∽
anc^2.3. (rut^2.)
Loc. Florida, 103 fathoms; Portugal.

5. ***Desmacidon fruticosa*** (Mont.) Bwk. '66.
Synon. Halichondria fruticosa Johnst. '42. (acc. to Bwk.)

Spongia fruticosa. Montagu. 1818. (acc. to Johnst.)
? Spongia crispata Esp. 1830. (acc. to Johnst.)
? Spongia lichenoides Pallas. 1766. (acc. to Mont.)
Spongia licheniformis. Lam. (acc. to Johnst.)
Halichondria fruticosa Flem. 1820. (acc. to Johnst.)

Litt. Bowerbank M. Br. Sp. II. p. 345, III p. 155. —
Johnston. Br. Sp. pag. 102. —
Montagu. Essay on Sp. p. 112.
Gray. Brit. pl. I. 360.
Grant. New. Phil. Journ. II p. 139.
Blainv. Actin. pl. 94 fig. 10. (copied from Grant.) —
Esper. Pflanzenth. Sp. Tab. 37. fig. 1—3. —
Pallas. Elench. Z. p. 378?
Gmelin. p. 3824. —
Lamarck. Anim. s. Vert. II p. 354, [2e edit. II pag. 543.]
Lamouroux. Cor. Flex. 22. Corall. 153. —
Fleming. Brit. Anim. p. 522.

Spic. ac^2.
∽
anc^2.2.

Loc. Forwey, Hastings.

6. ***Desmacidon villosa*** (Crtr.) Vosm.

Synon. Esperia villosa Crtr. '74.

Litt. Carter. Ann. a. Mag. XIV p. 213.

Spic. tr$^\circ$. ac. f. (tr. ac. f.)
∽
rut^2. (two kinds?)

Loc. Between the N. Coast of Scotland and the Färoër Islands.

7. * ***Desmacidon lentus*** [1]) nov. spec.

Spic. ac^2 (bent).
(ac^{2}f.).
tr^2. (bent).

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1) Lentus, flexible.

tr. ac. (tr^0. ac.).
anc^2.3 (rut^2.).
(anc^{2}2.)

Loc. Coast of France. (Mus. L. B.).

This species, and the following still more so, are typical examples of *Desmacidon*'s. The large amount of „keratode fibre" makes the Sponge very flexible, even in the dried state. The form resembles that of *Isodictya palmata* Bwk. (see lower down). The Leyden Museum possesses only one dried specimen, of the above described Sponge; it is in good condition. The skeleton is formed by very stout spicules, which are nearly all imbedded in strong fibre. The fibres form a regular compact network: radiating bundles, placed close to each other, being united together by others perpendicular to them. It thus takes the appearance of a combination of ladders. On the surface there are numerous, slightly raised oscula (?) between these innumerable pores (?). The acerate spicules, which are bent in the middle, prevail. They are larger than the fusiformi-acerate and acerate ones. The anchors are not very common. The shafts and the hooks are often flexuous.

8. * **Desmacidon elastica** nov. spec.

Spic. ac^2 bent in the middle.
ac^2. f.
tr^0. ac. f. (very large).
tr^2.
? tr. ac. sp. (rare).
anc^2.3.
rut^2.

Loc. Cape of Good Hope. (Mus. L. B.)

As was already mentioned the fibre is very strong, rendering the Sponge flexible. The form also resembles that of *Isodictya palmata* Bwk. On the surface numerous little pores (?) and greater oscula (?) are visible, the latter being placed in groups, like sieves. The large sub-fusiform acerate spicules have about four or five times the length of the ac^2, tr^2, tr. ac. sp. etc. The spinous spicules are so very rare that it is not impossible they do not belong to the sponge. The anchors are of two kinds; the anc^2.3 have two large flexuous hooks and a small rudimentary one in the middle.

9. ***Desmacidon palmata*** (Bwk.) Vosm.

Synon. Isodictya palmata. Bwk. '66. —
Halichondria palmata Johnst. '42. (acc. to Bwk.) —
Spongia palmata Ellis and Sol. 1786 ? (acc. to Johnst.) —
Spongia bacillaris L. (acc. to Johnst.) —
Spongia oculata Esp. (acc. to Johnst.) —
Manon oculatum Schweig. (acc. to Johnst.) —
Tupha palmata Gray. (acc. to Johnst.) —
Halispongia palmata. Blainv. (acc. to Johnst.)—
Spongia digitata Esp. (acc. to Ehlers).
Homoeodictya digitata (Esp.) Ehlers.

Litt. Bowerbank. M. Br. Sp. II p. 311, III pag. 133. —
Johnston. Br. Sponges. pag. 92.
Fleming. Brit. Anim. p. 523.
Johnston. Trans. Newc. Soc. II p. 269.
Bellamy. South Devon. p. 268. —
Ellis and Solander. Zooph. p. 189.
Sibb. Scot. ill. II liv. IV p. 55.
Jameson. Wern. Mem. I p. 562.
Montagu. ibid. p. 80.
Lamarck. An. s. Vert. II p. 379; 2$_e$ edit p. 569.
Lamouroux. Cor. Flex. p. 75.
Lamouroux. Corral. p. 181.
Parkins. Oryctology. p. 46 and 48.
Stark. Elem. II. p. 424. —
Linné. Syst. Nat. p. 1299.
Müller. Zool. Danica. prod. p. 256.
Lamouroux. Cor. Flex. p. 83.
Lamouroux. Corall. p. 186.
Esper. Pflanzenth. tab. I. fig. 1, 2. —
Schweiger. Handb. p. 422. —
Gray. Brit. Pl. 1. p. 355. —

Blainville, Actinol. p. 533. —
Esper. Die Planzenth. p. 190. Sp. Tab. II.
Ehlers. Die Esp. Spongien. pp. 16, 32 a. 35.
Spic. ac^2.
anc^2.
Loc. Northumberland, Scotland, Orkney and Shetland Islands, Devon, Norway.

10. **Desmacidon Dianae** O. S. 78.
Litt. Schmidt. Sp. Atl. Geb. pag. 55.
Spic. tr^2.
∽
Λ sp. (stout).
anc^2.
Loc. Florida; 125 fathoms.

11. **Desmacidon incrustans** (Bwk.) Vosm.
Synon. Halichondria incrustans Bwk. '66. —
Halichondria saburrata Johnst. '42. (accord. to Bowerbank and Carter).
Halichondria incrustans Johnst. '42. (accord. to Bowerbank and Carter). —
Alcyonium incrustans Esper '30. (acc. to Johnst.)
Spongia fava Mont. '18. (acc. to Johnst.) —
Spongia panicea Grant. (acc. to Johnst.) —
Halichondria panicea Flem. '28 (not. acc. to Bowerb. but acc. to Johnst.)
Halispongia panicea. Blainv. (acc. to Johnst.) —
Litt. Bowerbank. M. Br. Sp. II p. 249. III p. 108. —
Johnston. Br. Sp. pag. 120 and 197. —
Carter. Ann. and Mag. 1874. XIV pag. 208.
Schmidt. II Suppl. pag. 17.
Johnston. Br. Sp. pag. 122. —
Esper. Pfl. Th. Alcyon. tab. XV.
Lamarck. Anim. s. Vert. II p. 397; 2e edit. II p. 603.
Lamouroux. Cor. Flex. p. 340.
Lamouroux. Corall. p. 244. —
Montagu. Br. Sp. p. 115.
Gray. Brit. Pl. I p. 360. —

Grant. Ed. Phil. Journ. XIII p. 104, XIV p. 118.
Grant. New Phil. Journ. I p. 347, II p. 128 and 138.
Blainville, Actinol. pl. 94. —
Fleming. Brit. Anim. p. 520. —
Blainville. Actinol. p. 532. —

Spic. tr. ac.
tr. ac. sp.
tr. ac. f.
∽
anc^2.

Loc. Frith of Forth, Hebrides, Orkeney's, Shetland, Welsh and Irish Coast, Hastings.

GENUS VII. CRAMBE [1]) NOV. Gen.

Irregular, branched, siliceous corpuscules with axial canals. Rods smooth or spined. Anchors equiended.

1. ***Crambe harpago.*** Vosm.

Synon. Suberites crambe O. S. '62.
Suberites fruticosus O. S. '62.

Litt. Schmidt. Sp. A. M. p. 66.

Spic. tr. ac.
tr$^\circ$. ac.
ac^2 (slender, flexuous).
anc^{2}3.
? ∽
? Λ
irregular corpuscules.
„foliato-peltate".

Loc. Lissa, Sebenico, Lesina.

I have had occasion to examine the original specimens of Schmidt preserved in Graz, and I have found both *Suberites crambe* and *fruticosus* to be identical. Schmidt has not seen the anchors, and so arranged this Sponges under

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1) κράμβη, cabbrge.

the Suberitidae. The anchors are rather stout: there are two extremes, viz. those with short, thick shafts and those with long, slender shafts; transitions often occur between these two. The three hooks are strong, and resemble claws or the roman *harpago.* I am not sure whether bows and S-shaped spicules occur. I have noted at the time that I have seen them, but I cannot find them again just now.

GENUS VIII. HASTATUS [1]) NOV. GEN.

Acerate rods with hastate ends; also simple acerate rods and smooth or spined acuate spicules. Anchors equiended.

1. ***Hastatus luridus*** (Bwk.) Vosm.
   Synon. Isodictya lurida Bwk. '66.
   Litt Bowerbank. M. Br. Sp. II p. 336, III p. 149.
   Spic. tr. ac. (two kinds.)
   tr. ac. sp.
   ac^2. NB.
   ac^2. (slender).
   $anc^2.3$.
   Loc. Northumberland.
2. ***Hastatus Dickiei*** (Bwk.) Vosm.
   Synon. Halichondria Dickiei Bwk. '66.
   Litt. Bowerbank. M. Br. Sp. II p. 253, III p. 111.
   Spic tr. ac. sp.
   ac^2. NB.
   ac^2.
   $anc^2.3$. ($anc^2 2$?)
   Loc. Strangford Lough.

GENUS IX. CRIBRELLA. O. S. '62.

Rods smooth or spined. Anchors bi- or tridentate, equiended.
Pores congregated in sieve-like groups.

1. ***Cribrella hamigera*** '62.

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1) *Hastatus,* armed with a *hasta.* The roman *hasta* had lanceolate points at both extremities.

Litt. Schmidt. Sp. A. M. pag. '70.
Spic. tr. tr.
tr. ac.
anc^2.3. (small).
Loc. Zara.

2. ***Cribrella elegans*** O. S. '62.
Litt. Schmidt. Sp. A. M. p. 70.
Spic. ac^2. sp.
ac^2.
tr. ac. sp. (rare).
? anc^3.
Loc. Zara.

3. ***Cribrella hospitalis*** O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. p. 56.
Carter Ann. a. Mag. 1876. XVIII. p. 313.
Spic. ac^2. (slender).
tr. ac. sp. (not numerous).
tr^2. f. (acc. to Carter).
anc^2.3. (stout).
Loc. Florida, in 15 fathoms.

4. ***Cribrella papillosa*** O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. p. 57.
Spic. tr. tr. (tr^2 ?)
ac^2. sp.
anc^2.3.
Loc. Florida; 135 fathoms.

GENUS X. CHONDROCLADIA Wyv. Thoms. '73.

Rods smooth or spined; bows or (and) S- shaped spicules. Anchors equiended, the ends umbrella-shaped. Sponges with arborescent stems. Keratode fibre conspicuous in the axis.

1. ***Chondrocladia virgata*** Wyv. Thoms. '73.
Synon. ? Axos Cliftoni Gray '67. (accord to Carter).
Litt. Wyv. Thomson. Detphs of the Sea. p. 188.

Carter Ann. a. Mag. 1874. XIV p. 217. —
Schmidt. Ergebn. N. F. p. 119.
Gray. Proc. Z. Soc. p. 546.
Spic. tr. ac.
tr$^{\circ}$. ac. f.
∽
anc^{1}.
Loc. Atlantic Ocean.

2. ***Chondrocladia abyssi*** (Crtr.) Vosm.
Synon Halinchondria abyssi. Crtr. '74.
Litt. Carter. Ann. a. Mag. 1874. XIV p. 245.
Cart. Ann. a. Mag. 1876. XVIII p. 315.
Spic. ac^{2}. f.
tr. ac.
tr$^{\circ 2}$. f.
(Λ)
anc^{2}.
Loc. Between the North Coast of Scotland and the Färoë Islands, N. W. of the Shetland Islands, in 345 fathoms.

GENUS XI. CLADORHIZA. M. Sars. '72.

Rods smooth or spined. Bows or (and) S- shapd spicules. Anchors inequiended, one end umbrella-shaped. Sponges with arborescent stems. Keratode-fibre in the axis.

1. ***Cladorhiza abyssicola*** M. Sars. '72.
Litt. Sars. On some rem. forms of anim. L. p. 65.
Carter. Ann. a. Mag. 1874. XIV p. 218.
Carter. Ann. a. Mag. 1876. XVIII. p. 319.
Schmidt. Erg. N. F. p. 119.
Marenzeller. Coelent. Oester. N. E. p. 15.
Spic. tr. ac. f.
∽ (stout, as well as minute ones).
anc. anc. („3—5 teeth").

Loc. Lofoten, 300 fathoms; Skagerak, 294 fathoms (O. S.); Shetland (Crtr.), Between Franz-Joseph Land and Nova-Zembla, in 142 fathoms (Marenz.).

The variety *cortiocanellati* Crtr. has bihamate spicules, „with nearly a straight shaft, and a prolonged, whiplike, everted end to each extremity".

Between the north of Scotland and the Shetland and the Färoë Islands, in 345—632 fathoms".

2. ***Cladorhiza pennatula*** O. S. '75.

Litt. Schmidt Erg. N. F. pag. 119.

Spic. tr. ac.
(tr°. ac.)
∽
anc. anc.

Loc. S. W. of Bukenfjord, W. S. W. of Hougesund, 106 fathoms.

Genus XII. Esperia. Nardo, Char. emend. Schmidt.

Rods smooth or spined. Bows or (and) S. shaped spicules. Anchors palmato-dentate, inequiended. Keratode-fibre often persisting after the death of the Sponge.

1. ***Esperia Contarenii*** (Mart.) O. S. '62.

Synon. Spongia Contarenii Martens '24 (acc. to O. S.) —
Esperia typica. Nardo. '33 (acc. to O. S.). —
Esperia foraminosa O. S. '62. —
Esperia Bauriana O. S. '62. —

Litt. Schmidt. Sp. A. M. pag. 54. —
Czerniawsky. Bull. Soc. I. d. N. M. 1878. p. [var. *pontica* and *flava*].
Martens. Reise n. Venedig. —
Lieberkühn. M. A. 1859 pag. 525. —
Nardo. Sp. Class. Isis. 1833. —
Schmidt. Sp. A. M. pag. 54. —
Schmidt. Sp. A. M. pag. 55. —

Spic. tr°. ac. f.

∽ (stout).
Λ
rut. rut. (minute).

Loc. Venice (O. S.), Caspic Sea (Czern.) — Zara (O. S.) — Muggia (O. S.). Triëst (Vosm.).

Schmidt has not seen the bows. I have found them however in the original specimens.

2. * ***Esperia tunicata*** O. S. '62.

Synon. ? Esperia Bowerbanki O. S. '62.
Litt. Schmidt Sp. A. M. pag. 55.
Spic. tr. ac. (tr. ac.).
ac^2.
∽ (according to Schmidt; I have not found them in the original specimen).
rut rut.

Loc. Zara (O. S.), Triëst (Vosm.) — Muggia, Quarnero, Triëst (O. S.).

It is not impossible that Schmidt's *Esp. tuberosa* is identical with *Esp. tunicata.*

3. ? ***Esperia tuberosa*** O. S. '68.

Litt. Schmidt. Sp. K. A. pag. 26 (without illustr.).
Spic. tr. ac. f.
ac^2. (very minute).
∽
rut. rut.

Loc. Zara.

Perhaps identical with the preceding, *Esp. tunicata* O. S.

4. * ***Esperia Syrinx*** O. S. '62.

Synon. Esperia Lorenzii O. S. '62.
Litt. Schmidt. Sp. A. M. pag. 56.
Spic. tr°. ac.
tr°. ac. f. (tr. ac. f.)
Λ
∽ (minute, few in number).
rut. rut. (two kinds ?).

Loc. Zara, 20-fathoms, Lissa. — Quarnero.

Schmidt does not mention bows in *Esp. syrinx*, but

I am certain that they do occur; I found them in both the original specimens (*Sp. Syrinx* and *Lorenzii*) in the Joan-Coll. in Graz. The specimen in the Leyden Museum is but a small one; without indication of locality. — The *Esperia borassus* Crtr. 76 is perhaps but a variety of *Esp. Syrinx* (see pag. 149).

5. ***Esperia massa*** O. S. '62.
  Litt. Schmidt. Sp. A. M. pag. '56.
  Schmidt. Erg. N. F. 1875 pag. 117.
  Schmidt. Erg. O. E. 187. pag.
  Spic. tr. ac. f.
    tr. ac.
    ac^2. (minute).
    ∞
    rut. rut.
  Loc. Quarnero, Lesina, Florida, S. W. of Bukenfjord (106 fathoms), Sölsvig.

6. ***Esperia modesta*** O. S. '62.
  Synon. Desmacidon copiosa Brok. '74.
  Litt. Schmidt. Sp. A. M. pag. '57. —
  Bowerbank M. Br. Sp. III p. 265.
  Spic. tr°. ac. f.
    ∞
    Λ
    rut. rut (two kinds ?)
  Loc. Sebenico, Lesina. — Jersey.

7. ***Esperia velutata*** (Lbkn.). O. S. '62
  Synon. Spongia velutata Lbkn. (acc. to O. S.).
  Litt. Schmidt. Sp. A. M. pag. '57. —
    Lieberkühn. M. A. 1859 pag. 526.
  Spic. tr°. ac.
    ∞
    rut. rut.
  Loc. Venice.

8. ***Esperia nodosa*** O. S. '64.
  Synon. ? Raphidotheca Marshall-Halli Sav. Kent. 1870.
  Litt. Schmidt. I. Suppl. pag. 33. —

Sav. Kent. Ann. a. Mag. 1870. VI. p. 217.
Spic. tr. ac. f.
(tr°. ac. f.)
(tr. ac.)
ac^2.
rut. rut.
Loc. Lesina. — Cezimbra (Portugal) 500 fathoms.

9. ***Esperia bacillaria*** O. S. '64.
Litt. Schmidt. I. Suppl. pag. 34.
Spic. tr°. ac.
tr°. ac f.
tr^2.
tr^2. f°. (acc. to Schmidt; I could not find them in the original specimen).
rut. rut. (few).
Loc. Lesina.

10. ***Esperia aegagropila*** (Johnst.) Crtr. '74.
Synon. Desmacidon aegagropila Bwk. '66.
Halichondria aegagropila Johnst. '42 (acc. to Bwk.).
Esperia sentinella O. S. '68.
Hymeniacidon subclavata Bwk. '66.
Hymeniacidon floreum Bwk. '66.
Rhaphiodesma floreum Bwk. '74.
Litt. Carter. Ann. a. Mag. 1874. XIV. p. 456.
Bowerbank. M. Br. Sp. II p. 352. III p. 163.
Johnston. Br. Sp. pag. 119. —
Schmidt. Sp. K. Alg. p. 30. —
Bowerbank. M. Br. Sp. II p. 209. III p. 93. —
Bowerbank. M. Br. Sp. II p. 190. —
Bowerbank. M. Br. Sp. III. p. 94.
Spic. tr°. ac. (tr. ac.).
tr. ac. f. (tr°. ac. f.).
cɔ
rut. rut.
Loc. Cornwall, Brighton, Hastings, Guernsey (Bwk.) ? S. Coast of France (O. S.). — Tenby (Bwk.). — Harris, Belfast, 15 fathoms. (Bwk.).

11. ***Esperia diaphana*** O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. pag. 57.
Spic. tr. ac.
rut. rut. (two kinds).
Loc. Florida, 140 fathoms.

12. ***Esperia robusta*** (Bwk.) Vosm.
Synon. Isodictya robusta Bwk. '66.
Desmacidon Jeffreysii. Bwk. '66 (acc. to Bwk.).
Oceanapia Jeffreysii Norman '68. (acc. to Bwk.).
Esperia renieroides O. S. '70.
Litt. Bowerbank. M. Br. Sp. II p. 304.
Bowerbank. M. Br. Sp. II p. 347. III p. 157.
Schmidt. II Suppl. p. 18. —
Norman. Rep. Brit. Assoc. '68. p. 334. —
Schmidt. Sp. Atl. Geb. pag. 57. (without illustr. of the spic.).
Spic. ac^2.
∽ (minute, rather numerous).
rut. rut. (acc. to Schmidt.) 1866.
Loc. Shetland. — Florida (O. S.).

13. ***Esperia immitis*** O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. pag. 57.
Spic. tr°. ac.
∽?
rut. rut. (two kinds ?).
Loc. Florida, 128 fathoms.

14. ***Esperia macilenta*** (Bwk.) Vosm.
Synon. Hymeniacidon macilenta Bwk. '66. —
Desmacidon similaris Bwk. '74.
Litt. Bowerbank M. Br. Sp. II p. 176. III p. 84. —
Bowerbank M. Br. Sp. III p. 312 and 319.
Spic. tr. ac.
∽
Λ
rut. rut.
Loc. Island Herm. — Jersey.

15. ***Esperia scandens*** (Bwk.) Vosm.

Synon. Halichondria scandens Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 259, III p. 112.
Spic. tr. ac. sp.
tr$^{\circ}$. ac. sp. (f.).
tr$^{\circ 2}$. (tr$^{\circ 2}$. sp.).
„bipocillated" (= ∽ ?).
rut. rut.
Loc. Shetland.

16. ***Esperia nigricans*** (Bwk.) Vosm.
Synon. Halichondria nigricans Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 266, III p. 113.
Spic. tr^{2}. sp.
tr. ac. sp.
„bipocillated" (= ∽ ?).
rut. rut.
Loc. Orkney's (?), Hebrides (?), Strangford Lough, Hastings.

17. ***Esperia Pattersoni*** (Bwk.) Vosm.
Synon. Halichondria Pattersoni Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 255, III p. 115.
Spic. tr^{2}. sp. (tr$^{\circ 2}$. sp.)
tr. ac. sp.
rut. rut.
Loc. Strangford Lough.

I must consider this species as a generic variety of *Amphilectus anceps* (O. S.) Vosm. [see pag. 119].

18. ***Esperia Hyndmani*** (Bwk.) Vosm.
Synon. Halichondria Hyndmani Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 264, III p. 115.
Spic. tr. ac. sp.
tr^{2}. (or ac^{2} ?)
„bipocillated". (= ∽ ?)
rut. rut.
Loc. Strangford Lough, Moray Frith, Hastings.

19. ***Esperia ingalli*** (Bwk.) Vosm.
Synon. Halichondria ingalli Bwk. '66.
Litt. Bowerbank. M. B. Sp. II p. 258, III p. 117.

Spic. tr. ac. sp.
tr°. ?
∽
rut. rut.
Loc. Hastings, Moray Frith.

20. ***Esperia lobata*** (Mont) Vosm.
Synon. Isodictya lobata Bwk. '66.
Spongia lobata Mont. '18 (acc. to Bwk.).
Tupha lobata Gray. (acc. to Johnst.).
Spongia limbata Mont. (acc. to Johnst.).
Litt. Bowerbank. M. Br. Sp. II p. 326, III p. 148. —
Montagu. Br. Sp. pag. 85.
Fleming. Br. Anim. p. 526. —
Gray. Brit. Pl. I p. 356. —
Johnston. Br. Sp. p. 168.
Montagu. Brit. Sp p. 111.
Gray. Brit. Pl. I p. 360.
Fleming. Brit. Anim. p. 526.
Spic. tr. ac. (two kinds).
∽
rut. rut.
Loc. Devonshire-Coast, Plymouth, Coast of Ireland.

21. ***Esperia constricta*** (Bwk.) Vosm.
Synon. Desmacidon constrictus Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 350, III p. 181 and 183.
Spic. tr. ac. f.
ac. ac. NB.
tr. ac. ?
∽
rut. rut. (two or three kinds).
Loc. Shetland.

22. ***Esperia expansa*** (Bwk.) Vosm.
Synon. Halichondria expansa Bwk. '74.
Litt. Bowerbank M. Br. Sp. III p. 207 and 212.
Spic. tr. ac. sp. (two kinds).
rut. rut. (two kinds?)

Loc. Skye.

23. ***Esperia sordida*** (Bwk.) Vosm.
Synon. Raphiodesma sordida Bwk. '74.
Litt. Bowerbank. M. Br. Sp. III p. 224 and 230.
Spic. tr°. ac f. (two kinds).
∧
∽
rut. rut.
Loc. Jersey, Ramsgate.

24. ***Esperia lingua*** (Bwk.) Vosm.
Synon. Raphiodesma lingua. Bwk. '74.
Hymeniacidon lingua. Bwk. '66.
Litt. Bowerbank. M. Br. Sp. II p. 187, III p. 119 and 237.
Spic. tr. ac. f.
∽
rut. rut.
Loc. Shetland, Western Islands, Scotland.

25. ? ***Esperia intermedia*** O. S. '74.
Litt. Schmidt. II d. N. E. pag. 433.
Spic. „unspitzig" (= ?)
rut. rut. (two kinds?)
Loc. Arendal?

26. ***Esperia rotalis*** (Bwk.) Vosm.
Synon. Desmacidon rotalis Bwk. '74.
Litt. Bowerbank. M. Br. Sp. III p. 323.
Spic. tr. ac.
∽
rut. rut.
Loc. Hastings.

27. ***Esperia stolonifera*** Merejk. '78.
Litt. Merejkowsky. Eponges M. Bl. pag. 23.
Spic. tr. ac. (f.).
tr^2.
tr°. ac.
rut. rut.
Loc. White Sea.

28. ***Esperia affinis*** (Crtr.) Vosm.
Synon. Raphidotheca affinis Crtr. '79.
Litt. Carter. Journ. R. Micr. Soc. p. 497.
Spic. tr. ac.
rut. rut.
Loc. N. Atl. Ocean, 363 fathoms.

29. ***Esperia cupressiformis*** Crtr. '74.
Litt. Carter. Ann. and Mag. 1874. XIV. p. 215.
Spic. tr. ac. f.
tr°. ac. f.
Λ
„forcipiform" (the extremities swollen).
rut. rut.
Loc. Atl. Ocean; between the North of Scotland and Färoë Islands, deep sea.

30. ***Esperia bihamatifera*** (Crtr.) Vosm.
Synon. Esperia cupressiformis var. bihamatifera Crtr. '76.
Litt. Carter. Ann. a. Mag. XVIII p. 318.
Spic. tr. ac. f.
tr°. ac. f.
∽
rut. rut. (two kinds).
Loc. „Chops of the English Channel?"

31. ***Esperia lucifera*** O. S. '73.
Litt. Schmidt. Erg. Ostsee Exp. p. 148. (the illustr. in Erg. N. F. !)
Spic. tr. ac. (tr°. ac.)
ac^3. (minute).
∽
rut. rut. (two kinds).
Loc. Arendal.

32. ***Esperia placoides*** Crtr. '76.
Litt. Carter. Ann. a. Mag. XVIII p. 316.
Spic. tr°. ac. f.
Λ
∽
rut. rut.

Loc. N. N. W. of the Shetland Islands, 345 fathoms.

33. ? **Esperia borassus** Crtr. '76.
Litt. Carter. Ann. a. Mag. XVIII p. 317.
Spic. tr°. ac. f.
∽
Λ
rut. rut.
Loc. ? Cape St. Vincent, 374 fathoms.

34. **Esperia radiosa** (Bwk.) Vosm.
Synon Raphiodesma radiosa. Bwk. '76.
Litt. Bowerbank. Proc. Z. Soc. p. 773.
Spic. tr. ac.
∽
rut. rut.
Loc. Savanilla (South America).

35. ? **Esperia irregularis** Czerniawsky '78.
36. ? **Esperia Stepanovii** Czerniawsky '78.
37. ? **Esperia muscoides** Czerniawsky '78.

These three Sponges are described as new by Czerniawsky, Bull. Soc. Nat. de Moscou. 1878, but in the Russian language, and so no further references can be given about them.

GENUS XIII. SCEPTRELLA O. S. '70.

Rods verticillately spined, having moreover spines at both ends; also smooth rods. Anchors inequiended.

1. **Sceptrella regalis** O. S. '70.
Litt. Schmidt. Sp. Atl. Geb. p. 58.
Spic. tr. tr. sp. [„verticillately spined cylindrical" Bwk.; „Schach-figurenförmig" O. S.]
(tr. ac. sp.)
rut. rut.
Loc. Florida, 262 fathoms.

2. **Sceptrella triloba** O. S. 75.
Litt Schmidt. Erg. M. F. p. 119.

Spic. tr. ac. f (two kinds).
tr. tr. sp.
Loc. S. W. of Bukenfjord, 106 fathoms.

GENUS XIV. CLATHRIA O. S. '62. p. p.; char. emend. Vosm

Rods smooth or spined, „echinating." Anchors minute, equiended.

I have found that the genus *Clathria* of Schmidt possesses distinct, often very numerous anchors and bows; so it is to be placed under the *Desmacidinae.* But not all the species, described by Schmidt, belong to the same genus. Prof. Oscar Schmidt was so kind as to send me original specimens; unhappily he had not specimens of all his species, and so the question remains undecided as regards *Cl. rectangulosa.*

1. ***Clathria coralloides*** O. S. char. emend Vosm.

Synon. Spongia coralloides Olivi. (acc. to Schmidt).
Spongia clathrus Esp. (acc. to Schmidt).
Grantia coralloides Nardo. (acc. to Schmidt).
Halichondria corona Lbkn. '59. (acc. to Schmidt).
? Clathria rectangulosa. O. S. '70. (acc. to Schmidt).

Litt. Schmidt. Sp. A. M. p. 58.
Schmidt. Sp. K. A. pag. 9. —
Olivi. Zoologia Adriatica.
Esper. Pflanzenth. II Taf. 9. —
Nardo. Spong. Classif.
Lieberkühn. M. A. 1859. pag. 521.
Schmidt. Sp. Atl. Geb. p. 60.

Spic. tr. ac. (tr°. ac.)
tr. ac. f. (tr°. ac. f.).
tr. ac. sp. (very rare).
∧
anc^2. (minute).

Loc. Triëst, Zlarin, Lesina, Mediterranean. ? Florida, 7 fathoms.

I have examined Schmidts original specimen, for which I am indebted to the kindness of Prof. F. E. Schulze, and many other specimens, which I found in the Adria. There are but a few Sponges that have so characteristic a „*habitus*" as *Clathria coralloides*, and so no confusion as to the species is possible. In all these I found plenty of anchors. At the same time I could see that the keratode-fibre frequently varies in strength. I propose therefore to recognise two varieties; one is very soft *(var. mollis)*, the other on the contrary has extremely strong keratode-fibre (*var. ceratodes* [1]). The Leyden Museum possesses of this latter variety two very interesting specimens from the Mediterranean. The strong fibre prevails here; only a few spicules occur. Between this variety and the soft one, there are naturally a great many transitions.

2. * ***Clathria compressa*** O. S. '62. char. em. Vosm.
   Synon. Spongia clathrus. Var. Esp. (acc. to Schmidt).
   Litt. Schmidt. Sp. A. M. pag. 58.
   Spic. tr. ac.
      tr. ac. f.
      (tr°. ac., tr°. ac. f.).
      tr. ac. sp. (much smaller than the smooth ones).
      tr. tr. ?
      ∧
      anc^2. (minute).
   Loc. Triëst.
3. ***Clathria morisca*** O. S. '68. Char. emend. Vosm.
   Litt. Schmidt. Sp. K. A. p. 9.
   Spic. tr. ac. sp.
      tr. ac. sp. f.
      tr°. ac.
      tr°. ac. f.
      ∧ (rare).
      rut^2. (minute).
   Loc. Algiers.

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[1] κερατώδης, horny.

The above mentioned spicules are found in an original specimen, sent to me by Prof. Schmidt.

4. * ***Clathria lobata.*** nov. spec.

Spic. tr. ac. f. (tr° ac. f.).
tr. ac. sp. (strongly spined).
ac^2. (rare).
tr^2.
∧ (sp.).
⌣
anc^2.

Loc. Cape of Good Hoope. [Mus. L. B.].

The Leyden Museum possesses two beautiful specimens of this Sponge. One has no indication of locality, the other is from the Cape of Good Hope.

The Sponge, which in the dried state is pure white, is rather elastic on account of the keratode-fibre. It forms more or less flat, branching lobes.

Very characteristic for this species are the bows, the ends of which are spined. (Schmidt describes quite such bows of his *Suberites arciger* [1]). The anchors are small but rather stout, few in number. The spines of the tr. ac. sp. are very strong, and bent towards the blunt end of the spicule. In the formula I have designated with a ⌣ the small spicules which are often almost bent into a circle. I could not distinctly see whether the ends are blunt or pointed. Also in the following Sponge these spicules occur.

It seems to me not impossible that Schmidt's *Suberites arciger* is indeed a *Clathria*, closely allied to our *Clathria lobata.* But as I have not seen an original of it, I can not speak definitely.

5. * ***Clathria ulmus*** nov. spec.

Spic. tr°. ac.
tr° ac. f. (tr. ac. f).
tr. ac. sp.

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[1] Grundzüge einer Spongien-Fauna des Atl. Gebietes pag. 47.

⌣

? ∧ ? (very rare).

anc^2. (small). [Mus. L. B.]

The Leyden Museum possesses four specimens of this Sponge, all being in the dried state. The fibre is extremely strong, especially in the stem, which is ramified, so as to form a complex of branches, not unlike the top of an elmtree.

6. * ***Clathria Reinwardti*** nov. spec.

Spic. tr. ac.
tr$^\circ$. ac.
(tr^2.).
tr. tr. sp. (tr. ac. sp.).
anc^2.

Loc. Moluccas. [Mus. L. B.].

I found in the Leyden Museum a Sponge from the Moluccas, with a label: *Spongia cannabina* Esp. XLV. Apparently the Sponge has been determined only from superficial inspection. Now Schmidt, and Ehlers after him, have demonstrated that Esper's *Spongia cannabina* is an *Axinella* O. S. Our Sponge however possesses no *axis*, but is a distinct *Clathria*. The echinate position of the spined spicules show this. The Sponge is not ramified, but forms a flat strip. The spined spicules are short and for the most part not sharp pointed; they are represented in the formula by tr. tr. sp. The anchors are minute.

I have named this species after Reinwardt, who brought it from the Moluccas.

7. * ***Clathria elegans*** nov. spec.

Spic. tr. ac.
tr$^\circ$. ac.
tr. ac. f.
tr. ac. sp.
anc^2.3.
rut^2.

Loc. North-America. [Mus. L. B.].

There are two kinds of smooth rods viz. slender ones, and stout ones. The spined spicules are rather stout; the spines bent towards the blunt end, which often itself is spinous too. The anchors are minute.

8. **Clathria clathrata** (O. S.) Vosm.
Synon. Tenacia clathrata O. S. '70.
Litt. Schmidt. Sp. A. G. p. 56. (without illustration).
Spic. tr. ac.
tr°. ac.
tr. ac. sp.
∧
∽
anc^2.
Loc. Antilles. Florida.

9. **Clathria frondiculata** (O. S.) Vosm.
Synon. Reniera? frondiculata O. S. '64.
Litt. Schmidt. I Suppl. p. 59.
Spic. tr. ac. (f.).
tr°. ac. (f.).
tr. ac. sp. (tr. ac. sp. f.).
∧
∽
anc^2.
Loc. Triëst.

As Schmidt in '70 did not give any illustration with the description of his *Tenacia clathrata* it is impossible to identify it with another species. According to the enumeration of the spicules however, I should like to unite N°. 8 and 9 under the name *Cl. frondiculata.* As to the enumerated spicules of the latter, I found these in Schmidt's original specimen in the Joanneum in Graz.

10. **Clathria anchorata** (Crtr.) Vosm.
Synon. Dictyocylindricus anchorata Crtr. '74.
Litt. Carter. Ann. a. Mag. XIV p. 251.
Spic. tr. ac.
tr°. ac. sp.
anc^2. (very minute),
Loc. Atlantic Ocean.

11. ***Clathria abyssorum*** (Crtr.) Vosm.
Synon. Dictyocylindricus abyssorum Crtr. '76.
Litt. Carter. Ann. and Mag. XVIII. p. 232.
Spic. tr. ac.
tr°. ac. (the head is denticulated).
tr°. ac. sp.
Λ (the ends are spined).
rut^{2}.
Loc. Between the north of Scotland and the Färoë Islands; 345—440 fathoms.

12. ***Clathria microcionides*** (Crtr.) Vosm.
Synon. Plumohalichondria microcionides Crtr. '76.
Litt. Carter. Ann. and Mag. XVIII pag. 236.
Spic. tr°. ac. (the head inconspicuously spined).
tr°. ac. sp.
ac^{2}.
anc^{2}. 3. (shaft very long).
Loc. Between the north of Scotland and the Färoë Islands; 440 fathoms.

13. ***Clathria Meyeri*** (Bwk.) Vosm.
Synon. Ophlitaspongia Meyeri Bwk. '77.
Liit. Bowerbank. Proc. Z. Soc. pag. 456.
Spic. tr. ac.
tr. ac. sp.
ac^{2}. (few).
anc^{2}. 2.
Loc. Kordo, Island of Mysore, Geelvink-Bay, New Guinea.

14. ***Clathria textile*** (Crtr.) Vosm.
Synon. Cornulum textile Crtr. '76.
Litt. Carter. Ann. and Mag. XVIII pag. 309.
Spic. tr^{2}. f. (the ends dentate?)
tr. ac. (slender).
Λ
rut^{2}. (minute).
Loc. 40 miles N. W. of the Shetland Island, 345 fathoms.

15. ***Clathria plena*** (Soll.) Vosm.
Synon. Plocamia plena. Sollas. '79.

Litt. Sollas. Ann. and Mag. IV p. 44.
Spic. tr^{o2}. (the head spined).
tr^{2}.
tr^{o}. ac.
tr. ac.
tr^{o}. ac. sp.
∧ (very minute).
anc^{2}.
Loc. West Africa, lat. 15° S.

Sollas has arranged this Sponge under Schmidt's *Plocamia*, but as Schmidt does not speak of anchors or bows, it cannot be so. One may be convinced [1]) that Schmidt has overlooked the anchors, but it is not permissible to arrange new species under this genus when the *original* of *Plocamia* O. S. is not described as possessing anchors!

Although it is very probable that Bowerbank's *Ophlitaspongia papilla* is a *Clathria*, yet it cannot be arranged under this genus, because the author does not speak of anchors. The same is the case with *Clathria oroides* O. S. As is well known Schmidt does not describe anchors; I therefore took occasion to ask him if he still possessed a little fragment which he could place at my disposal. Happily he did, and was so kind as to send me a specimen. Although the Sponge has distinct echinating spicules, it cannot be placed under *Clathria*, for I could not find anchors.

I have found in previous publications several Sponges which I do not know where to place. They are the following:

α. ***Melonanchora elliptica*** Crtr. '74.
Litt. Carter. Ann. a. Mag. XIV p. 212.

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1) Sollas says, and it is very possible that he is right, „it is just possible that, if present in the other forms, they may have escaped his attention."

Spic. tr. ac
tr^{o2}. sp.
anc^{2}. („the three arms, growing towards each other, at length unite").
Loc. Between the North Coast of Scotland and the Färoë Islands; deep sea.

β. ***Guitarra fimbriata*** Crtr. '74.
Litt. Carter. Ann. and Mag. XIV p. 210.
Spic. ac^{2}. f.
anc^{2}. („bordered inside throughout by a fringe directed inwards towards the shaft").
Loc. N. W. Coast of the British Islands; deep sea.

γ. ***Cometella pyrula*** Crtr. '76.
Litt. Carter, Ann. and Mag. XVIII p. 388.
Spic. tr. ac sp.
ac^{2}.
rut^{2}.
Loc. About 65 Miles N. N. W. of the Orkney's, in 290 fathoms.

It is evident that it cannot be a *Cometella O. S.* because this genus has no anchors!

When we now look back upon the family of the Desmacidinae, we see that at present 16 genera are known:

I.	*Desmacodes*,	with	species	16.
II.	*Desmacella*,	„	„	2.
III.	*Amphilectus*,	„	„	42.
IV.	*Sclerilla*,	„	„	2.
V.	*Myxilla*,	„	„	22.
VI.	*Desmacidon*,	„	„	11.
VII.	*Crambe*,	„	„	1.
VIII.	*Hastatus*,	„	„	2.
IX.	*Cribrella*,	„	„	4.
X.	*Chondrocladia*,	„	„	2.
XI.	*Cladorhiza*,	„	„	2.

XII.	*Esperia*,	with species	31.
XIII.	*Sceptrella*,	„ „	2.
XIV.	*Clathria*,	„ „	15.
XV.	*Melonanchora*,	„ „	1.
XVI.	*Guitarra*,	„ „	1.

That is a total of 162 species. As I have mentioned before, I had not the *whole* literature on the subject at my disposal. So this number might be augmented still. But on the other hand we may hope that our knowledge about these species will go on increasing and then, I am sure, many will be shown to be synonyms.

It is rather a remarkable fact, that the more one studies the systematical arrangement of Sponges, the more one becomes convinced, that many species are identical. The result of my studies on the *Desmacidinae* has been that plenty of synonyms have been described; when I presumed this to be case, I have united them, but I have never felt the necessity of making two species from one! Schmidt has shown in what manner Sponges can vary; F. E. Schulze has given many examples in his splendid studies on Ceraospongiae, especially in his: »Die Familie der Spongidae." Both Schmidt und Schulze have demonstrated that the word »species" is to be used in a very wide sense.

LITERATURE. (In alphabetic order).

In the following list of books used, I have only given the *principal* titles, not the complete enumeration. I hope to publish soon a complete list of titles of those books and articles in which there has been made mention of Sponges: I refer to that paper.

H. M. D. de Blainville, Manuel d'Actinologie. Paris 1834—37 [Actinol.]

J. S. Bowerbank, A Monograph of the British Spongiadae. [M. Br. Sp.] Vol. I (1866), Vol. II (1872), Vol. III (1874).

" In the several above mentioned numbers of the Proceedings of the Zoological Society of London. [Proc. Z. Soc.]

H. J. Carter, In: Annals and Magazine of Natural History. [Ann. a. Mag.]

W. Czerniawsky, In: Bulletin de la Société Impériale des naturalistes de Moscou. 1878 (in russian language).

E. Ehlers, Die Esper'schen Spongien. 1870. [Esp. Sp.]

E. J. C. Esper, Die Pflanzenthiere. 3 Vol. 1788—1830.

R. E. Grant, In: Edinburgh Philosophical Journal [Edinb. Phil. Journ.]; and in the: New Philosophical Journal.

G. Johnston, A history of British Spenges and Lithophytes. Edinburgh 1842. [Br. Sp.]

N. Lieberkühn, In: Archiv für Anatomie, Physiologie und wissensch. Medicin. [Müll. Arch.]

E. von Marenzeller, Die Coelenterata, Echinodermen und Würmer der K.K. Oesterreichisch-Ungarischen Nordpol-Expedition [Denkschriften der Mathem. Naturw. Classe der Kaiserl. Akad. von Wissensch. 1877. XXXV.]

C. Merejkowsky, Etudes sur les éponges de la Mer Blanche, in: Mém. de l'Acad. Impér. d. Sc. de St. Pétersbourg. XXVI. 7. 1879. [Ep. M. Bl.]

G. Montagu, An Essay on Sponges, in: Mem. of the Wernerian Nat. Hist. Society. 1818. (NB.) [Ess. on Sp]

E. Norman, In the above mentioned numbers of the: Annals and Magazine.

M. Sars and G. O. Sars, On some remarkable forms of animal life from the great deeps off the norwegian coast. 1872.

W. Saville Kent, In: Annals and Magazine of Natural History.

Oscar Schmidt, Die Spongien des Adriatischen Meeres. 1862. [Sp. A. M.]

„ Supplem. der Spongien des Adriatischen Meeres. 1864. [I Suppl.]

„ Zweiter Supplem. der Spong. des Adr. Meeres. 1866. [II Suppl.]

„ Die Spongien der Küste von Algier. 1868. [Sp. K. A.]

„ Grundzüge einer Spongien-Fauna des Atlantischen Gebietes. 1870. [Sp. A. G.]

„ Article „Spongien", in: Zweite deutsche Nordpolarfahrt. 1874. [Zw. Nordp. F.]

„ Article: Spongien, in: Jahresbericht der Commission zur wissensch. Unters. der Deutschen Meere in Kiel. V. Zoolog. Ergebnisse der Nordseefahrt. 1875. [Erg. N. F.]

W. J. Sollas, In: Annals of Magazine of Natural History.

C. Wyville Thomson, The Depths of the Sea. 1873.

ADDENDA ET CORRIGENDA.

To add: p. 135:

12. ***Desmacidon compressa*** Ehlers '70.
Synon. Desmacidon compressum Ehl. '70.
Spongia compressa Esp.
Litt. Ehlers. Die Esp. Sp. p. 20 and 31. —
Esper. Die Pflanzenth. Forts. I. 201. Spong. Tab. LV.
Spic. ac^2.
rut^2.
Loc. Norway, Greenland, North-America.

13. ***Desmacidon frondosa*** Ehlers. '70.
Synon. Desmacidon frondosum Ehl. '70.
Spongia frondosa Esp.
Litt. Ehlers. Die Esp. Sp. p. 17 and 31.
Esp. Die Pflanzenth. Forts. I. 192. Sp. Tab. LI.
Spic. tr. ac.
tr. ac. sp.
ac^2.
rut^2.
Loc. India.

14. ***Desmacidon cratitia*** (Esp.) Vosm.
Synon. Spongia cratita Esp.
Rhaphidophlus cratitius Ehlers. '70.
Litt. Esper. Die Pflanzenth. Forts. I. 195. Sp. Tab. LIII. —
Ehlers. Die Esp. Sp. p. 18 and 31.
Spic. tr°. ac.
tr. ac. sp.
∽
anc^2.
Loc. India.

To cancel: p. 121. N°. 37.